MASTER OF SCIENCE
IN
INFORMATION TECHNOLOGY MANAGEMENT

FACILITATING SOFTWARE PROCESS IMPROVEMENT IMPLEMENTATION EFFORTS: A CASE STUDY OF FINANCIAL SYSTEMS ACTIVITY, KANSAS CITY

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Software process improvement initiatives are not unlike other process reengineering efforts. They are influenced by such dynamics as resistance to change, organizational structure, cultural barriers, and other issues. An effective plan for software process improvement implementation must address concepts of organizational change. In this thesis three perspectives on organizational change provide the frameworks for analyzing the software process improvement efforts of four organizations. Based on the change theory and implementation strategies of four organizations best practices relative to preparing an organization for process improvement, implementing process improvements, and sustaining the improvement effort are derived. A process improvement survey, archival material, personal interviews and site visits provide data on the process improvement efforts of the Financial Systems Activity Kansas City. These data are analyzed to characterize the challenges to the organization's process improvement efforts. Recommendations for mitigating these challenges are provided. The recommendations include an explicit design for planned change, transition management teams, piloting, integration of process improvement activities into the project cycle, and scanning the environment.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Software Process Improvement, Organizational Change, Software Engineering, Software Engineering Process Group, Capability Maturity Model

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INTRANET PROTOTYPE FOR THE UNITED STATES COAST GUARD ELECTRONIC SYSTEMS SUPPORT UNIT ALAMEDA

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The objective of this thesis is to explore uses of Internet technologies and business model enhancements for Electronic Systems Support Unit (ESU) Alameda, a small Coast Guard command. To accomplish this task, this thesis will introduce the concept of Intranet technology, portray the efforts required to create an Intranet, and then discuss the benefits associated with Intranet use.

The thesis introduces two popular design methodologies, analyzes the advantages and disadvantages of each, and determines the best Intranet design methodology for this project by analyzing the needs and abilities of the organization. In addition, it describes the gathering of system and user requirements, data types, processes performed, business model evaluations, and conceptual Intranet development.

The work comprised within this thesis will enable coding and implementation of the Intranet by another thesis team working jointly on this project. While this thesis covers details of analysis and specification development, the thesis of the other team will continue discussion by addressing software coding, security, and maintenance.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Intranet, ESU, Rapid Prototyping, Coast Guard, Computer, Web-Based Application, Specification, Business Model, Data Flow Diagrams, Processes, Electronic Systems Support Unit Alameda

A PROCESS SIMULATION DESIGN TO ASSESS PROMISING TECHNOLOGIES RELEVANT TO F/A-18 AIRCREW TARGET RECOGNITION

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F/A-18 aircrew visual target recognition during air-to-ground weapons employment is accomplished by the integration of sensors, systems, and information processing by the aircrew. The aircrew's ability to rapidly obtain target recognition from the cockpit display of the target scene is critical to accurate weapons delivery.

Using system engineering principles, a process simulation design was devised consistent with DoD acquisition reform regulations, that simulates how aircrew perform visual search and target recognition in attack aircraft, and it provides measures of performance (MOP) for decision-makers to assess the effectiveness of promising technologies. Two assessments were performed. The first experiment measures for effect in aircrew target recognition reaction time and accuracy using two different sensors – visible and infrared. An analysis of variance (ANOVA) of the measured reaction times data showed that aircrew using a visible sensor were significantly faster than aircrew using an infrared sensor. The second assessment involves aircrew cognitive model building during pre-mission planning using Mission Rehearsal Simulation (MRS) software. An ANOVA of the measured data revealed that aircrew who used the MRS software was significantly faster than aircrew who did not. An optimum aircrew training methodology

using MRS software was devised and it is currently being integrated into F/A-18 fleet replacement squadron training.

DoD KEY TECHNOLOGY AREAS: Human Systems Interface, Sensors, Modeling and Simulation, Other (Defense Acquisition, Systems Engineering)

KEYWORDS: Target Recognition, Human Factors, Simulation, Process Decomposition

TRANSFORMING DOD INTO A COMPLEX ADAPTIVE SYSTEM BY MEANS OF THE MARKET

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Many organizations, including the Department of Defense (DoD), are struggling to make sense of the new demands placed upon them by an environment characterized by constant change. While working within a constraint-filled domestic milieu, coping with an unfamiliar national security setting, and adapting to a transformation in warfare, DoD must foray into yet another challenging environment. The knowledge economy. To explore the possibilities offered by the knowledge economy is a must if DoD is to remain a viable instrument of American foreign policy. Only the market can provide the cost savings and efficiencies that will preserve DoD's position as the supreme warfighter.

This work will use the language of complexity theory to describe both the nature of the knowledge economy and the subsequent organizational forms that will be required to cope with its demands. These information-intensive surroundings are creating a common set of requirements for success, and these are blurring the distinction between public and private sector organizations.

In order to withstand the rigors of the new realities, organizations will have to evolve emergent-like properties that are found in complex adaptive systems. One way to incorporate emergent-like properties is through the adoption of the price mechanism. This is demonstrated with the use of agency theory and transaction-cost economics. Finally, the work shows that only through the gates of a reformed acquisition process can DoD begin its journey to a more complex adaptive form.

DoD KEY TECHNOLOGY AREAS: Command, Control, and Communications, Other (Economics and Information Technology)

KEYWORDS: Acquisition, Agency Theory, Complexity Theory, Economics, Market, Organization Theory, and Systems Analysis

IMPROVING THE ENGINEER RECONNAISSANCE REPORTING PROCESS THROUGH THE USE OF DIGITAL IMAGERY AND HANDHELD COMPUTERS

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This thesis explores an automated solution to improve the Engineer Reconnaissance Reporting Process. It proposes a proof-of-concept to enhance and improve the digital portion of the reporting process. This

thesis defines the current process identifying its capabilities, limitations, and deficiencies. It identifies a prototype suite of equipment to perform the automation. The prototype capitalizes on the inherent capabilities on the reporting process and minimizes the deficiencies.

This thesis investigates emergent Commercial Off-the-Shelf components to locate those devices that satisfy the requirements and take full advantage of current technological advances. It evaluates each component against a criteria of minimum requirements and selects the most compatable device. This thesis performs an actual implementation of the prototype testing its performance against a fictional scenario. It provides a step-by-step description and graphic representation of the implementation. This thesis analyzes and summarizes the data generated during the implementation and provides recommendations. Results of this analysis suggest implementation of the prototype is feasible and that it satisfies the imagery portion of the Engineer Reconnaissance Reporting Process.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communication

KEYWORDS: Engineer Reconnaissance, Proof-of-Concept, Hand-Held Personal Computer, Digital Imagery, Wireless Communication

FRAMEWORK FOR A LINK LAYER PACKET FILTERING SECURITY PROTOCOL

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Transport Layer (OSI Layer 3) switching and routing provides routing flexibility but not high throughput. Link layer (OSI Layer 2) switching provides high throughput but not the routing flexibility needed to manage topology change and load fluctuations in the network. Neither Layer 3 routing nor Layer 2 switching protocols were originally designed to support confidentiality and integrity of data, and authentication of participants. Proposals to integrate security may have positive results for data confidentiality, integrity and authentication, but often result in additional overhead, increased transmission latency, and decreased throughput. An added difficulty is reconciling standards and protocols when integrating heterogeneous routing networks with homogenous switching networks while minimizing impact on throughput.

This thesis examined current Internet extensions and architectures as well as IP security services and Layer 2 switching in IP-based networks. Requirements for a framework for a proposed security protocol include: Link Layer switching and routing; independence of particular communication protocols and standards; IP packet filtering and routing according to predetermined security policies and with no significant impact on throughput; and continued routing flexibility of IP. This security protocol, called Link Layer (Link Layer Packet Filtering (LLPF)), filters packets at the Link Layer, and boasts two innovations: use of an authentication trailer and multiple cryptographic keys with short cryptoperiods.

DoD KEY TECHNOLOGY AREA: Other **(**Computer Network Security)

KEYWORDS: Network Security, Asynchronous Transmission Mode (ATM), Internetworking, Protocol

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OPERATIONALIZATION OF INFORMATION TECHNOLOGY FOR THE 21ST CENTURY (IT-21): THE FLIGHT SCHEDULING FUNCTION IN PATROL SQUADRON 40 AS A CASE STUDY

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In the past several years, greater exploitation of information technology to increase leverage of information has become a central focus in the military. This focus is reflected in a number of strategic vision documents. Two significant examples are "Joint Vision 2010" signed in 1996 by the Chairman of the Joint Chiefs of Staff and the 1997 Quadrennial Defense Review Report. Achieving and using information superiority is seen as essential to future military success. This has led to the emergence of a new warfare paradigm: network-centric warfare.

Towards this end, the Navy's service-wide IT improvement initiative is Information Technology for the 21st Century (IT-21). IT-21 establishes a standard for IT capability to be achieved throughout the Navy within which Navy units can shape their IT improvements.

This study explores a requirements-approach for planning improvement of IT through IT-21. Specifically, it focuses on a single function of one squadron: flight scheduling in Patrol Squadron 40. This study addresses how to establish information requirements, assess current IT performance, and formulate specifications by which to drive planning for IT improvement. It concludes by mapping IT-21 components to requirements to provide VP-40 with a plan for improving its flight scheduling process through IT-21.

DoD KEY TECHNOLOGY AREA: Other (Information Technology Systems Analysis and Design)

KEYWORDS: IT-21, Flight Scheduling, Information Technology, Systems Analyais and Design

A FUNCTIONAL INTRANET FOR THE UNITED STATES COAST GUARD UNIT

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This thesis describes the complete development process of a functional Intranet for an operational United States Coast Guard (USCG) Electronic Support Unit (ESU) in Alameda, California. The final product is suitable for immediate use. It may also be used as a prototype for future Intranet development efforts.

The methodology used to develop a finished, working product provides the core subject matter for this thesis. The discussion concentrates on why certain applications were developed and what business benefits they provide.

The Intranet was developed in seven unique stages of the Waterfall Model of information systems design. The Waterfall Model traces a systems development lifecycle from planning, to logical design, through physical design, and finally ends with the implementation process. Each stage of the development model is addressed in this thesis.

Intranet technology provides a radical new means of communicating throughout an organization, which has the potential to change the organization. Elaboration on both the social and technical aspects of introducing an information systems change to the ESU is included.

DoD KEY TECHNOLOGY AREA: Computing and Software

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KEYWORDS: Intranet, Information Systems Design, HTML, Active Server Pages, Web Enabled Database, Internet, World Wide Web, Web Authoring, Waterfall Model, Rapid Prototyping, Coast Guard, ESU Alameda

DESIGN CONSIDERATIONS TO BE ADDRESSED WHEN DEVELOPING WEB BASED APPLICATIONS FOR SENIOR MANAGERS

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This thesis develops guidelines for building Web sites that are useful to senior managers in two ways. First, these managers can obtain information from or pass information to a site in order to accomplish tasks more effectively and efficiently. Secondly, the senior manager must be able to go to a site and use that site without being required to undergo instruction or read manuals before using the site. Web technology is in place to assist these managers in performing at a higher level. Methodologies used in this thesis combine a study using sample web sites, based on the Center for Executive Education Web Site, two surveys, database connectivity, and usability design practices to aid in Internet or intranet based applications. This document contains results from surveys of senior managers which are evaluated to select a suitable methodology for designing Web sites specifically for this subset of users.

DoD KEY TECHNOLOGY AREA: Other (Interface Design)

KEYWORDS: Usability, ODBC, Interface Design, Senior Management, Senior Managers, Internet, Intranet, Web Based Application Interface

VRML TERRAIN MODELING FOR THE MONTEREY BAY NATIONAL MARINE SANCTUARY (MBNMS)

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This thesis develops an online model of the topographic terrain of Monterey Bay National Marine Sanctuary (MBNMS) seafloor. Written in the Virtual Reality Modeling Language (VRML), the model is an interactive 3D application composed of hundreds of topographic tiles linked together to form a mosaic of the bay. Low-resolution tiles are traded for higher resolution tiles as the viewer gets closer to the terrain.

Important contributions include a naming convention for autogeneration of interlinked files, test usage of proposed metadata conventions linking VRML and the eXtensible Markup Language (XML), demonstrated use of the GeoVRML Working Groups proposed QuadLOD node, and a preliminary 3D navigation icon for terrain interrogation and wayfinding. Terrain data was produced from registered, smoothed and subsampled bathymetric sonarscan results. Because the model is geo-referenced with the Universal Transverse Mercator (UTM) coordinate system, a user can easily add scientific content or data to a selected location of the MBNMS in a manner analogous to adding 2D content to an HTML page. Thus, the user can place 3D content anywhere in the MBNMS in geographic context merely by specifying the geographic coordinates and depth of the content in standard VRML syntax.

Future work includes improvement of metadata interoperability, navigation icon user testing, and autogeneration of image-based texture tiles for scientific visualization.

DoD KEY TECHNOLOGY AREAS: Battlespace Environments, Computing and Software, Environmental Quality, Human Systems Interface, Sensors, Modeling and Simulation

KEYWORDS: World Wide Web, Virtual Reality Modeling Language (VRML), Large-Scale Virtual Environments (LSVEs), Monterey Bay, 3D Graphics Modeling

INTRANET-BASED DECISION SUPPORT FOR THE MARINE AIR GROUND TASK FORCE AVIATION COMBAT ELEMENT

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Information technology can be an effective force multiplier for the Air Combat Element (ACE) of the Marine Air Ground Task Force (MAGTF). Through the use of Intranet-based decision support, internet technology can be leveraged to improve the decision support and information processes of the ACE. This thesis reviews the objectives of Intranet-based decision support and provides a methodology to follow for implementing Intranet-based decision support for the ACE. The methodology combines systems development life cycle (SDLC) practices, command and control theory, an organizational analysis of the ACE and prototyping to achieve Intranet-based decision support. The results from a process analysis are evaluated to select suitable processes for migration to Intranet-based decision support. Prototype development involves coding approximately 100 software files in Cold Fusion. As part of the prototyping process, comments from fleet-based Marines are collected and incorporated in the prototype when possible. The methodology developed for this project could be used for other MAGTF related Intranet-based decision support systems.

DoD KEY TECHNOLOGY AREA: Command, Control, and Communications

KEYWORDS: Intranet, Marine Air Ground Task Force (MAGTF), Air Combat Element (ACE), Intranet-Based Decision Support

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PROCESS INNOVATION: ANALYSIS AND REDESIGN OF THE CALIFORNIA ARMY NATIONAL GUARD STATE EMERGENCY MOBILIZATION PROCESS

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Process innovation can empower an organization to realize orders of magnitude improvement in its key business processes. Through process redesign, information technology can be used as an enabler to support effective, efficient, and cross-functional business processes. The area of research for this thesis is the analysis and redesign of the State Emergency Mobilization Process (SEMP) of the California Army National Guard. This is accomplished through a detailed study of the State Emergency Mobilization Process with an emphasis of the key business processes of the California Army National Guard. The baseline process will be measured and diagnosed for inhibiting pathologies, and redesigned processes will be proposed based on benchmarking best practices of other organizations and by utilizing Process Innovation best practices. Critical process enablers such as people, culture and technology will be examined and applied to redesign alternatives. Once completed, the best redesigned business process will be recommended and an implementation plan drafted to integrate with the CA-ARNG Strategic Information Systems Plan.

DoD KEY TECHNOLOGY AREA: Other (Process Innovation)

KEYWORDS: California Army National Guard, Benchmarking, Reengineering, CA-ARNG, Change Management

REMOTE NETWORK ADMINISTRATION OF THE SEANET COMMUNICATION NODE SYSTEM

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Maritime data communications are expensive and of limited capacity. Currently there is no established infrastructure to support Internet connectivity for sea-going vessels. The SeaNet program is investigating maritime networking solutions. One aspect of the SeaNet program is promoting remote network management. Remote network management will provide the maritime research community with a flexible and cost-effective tool for monitoring sea based assets. The objective of this thesis is to investigate remote network management over a satellite connection in support of the SeaNet programs goals.

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To research the potential for remote network management, the Naval Postgraduate School has developed its own SeaNet laboratory. This laboratory simulates both the shipboard and shore-based infrastructure of the SeaNet program and conducts remote network management on these components. This thesis discusses the SeaNet program, network management concepts, the NPS SeaNet laboratory, research findings, and recommendations for future research. Remote Network Management of the SeaNet Control Node system is possible, however, continued research in this area is needed.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Network Management, Internet-to-Sea, SeaNet

DETERMINING AND APPLYING TELEMEDICINE MEASURES OF EFFECTIVENESS WITHIN THE U.S. NAVY
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Telemedicine is a system of healthcare delivery tools which uses telecommunications consultations as an alternative to transportation of the patient. There are no conclusive studies to prove or disprove the use of telemedicine and it is often implemented with little basis for measuring its effectiveness. Recent initiatives have been driven by advances in technology and pressure by upper management to reduce the cost of health care, but not from local needs assessments. This thesis provides a methodology to collect data used in supporting measures of effectiveness. The methodology is developed through a review of strategic goals, an assesment of potential measures of effectiveness, and the use of a model for data collection. It is applied at a Navy medical treatment facility recently installing telemedicine equipment.

DoD KEY TECHNOLOGY AREAS: Other (Information Systems and Technology, Medical and Biomedical)

KEYWORDS: Measures of Effectiveness, Telemedicine

DATA REQUIREMENTS FOR AVAILABILITY-BASED SPARING IN THE U.S. MARINE CORPS
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Availability based sparing was prescribed for use in all the military services by the DoD in 1985. Since then, the Army, Navy, and Air Force have all implemented, in varying degrees, availability based models; however, the Marine Corps has made little progress. Recent studies by the Center for Naval Analyses (CNA) suggest that the Marine Corps has a difficult road ahead as it seeks to implement such models. Among the most demanding challenges are the requirements for more detailed and accurate data. While the CNA studies examined a full-scale implementation of availability-based sparing, we argue that the Marine Corps can, and indeed should implement such models on a limited scale with data from current information systems. Because availability-based sparing models have different data requirements than the Marine Corps demand configured supply (SASSY) and maintenance (MIMMS) logistical information systems, we recommend changes to these systems in order to implement a full-scale availability-based model.

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DoD KEY TECHNOLOGY AREA: Materials, Processes, and Structures

KEYWORDS: Inventory Management, Readiness Based-Sparing, USMC Inventory Policy, Precision Logistics

THE DEVELOPMENT OF A LITTORAL REGION AREA COMMUNICATIONS NETWORK IN SUPPORT OF OPERATIONAL MANUEVER FROM THE SEA

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Despite the apparent abundance of modern communication technology such as satellites, computers, and fiber-optic transmission systems, communication capacity is a limited resource for littoral operations. The Navy and Marine Corps lack the dedicated networks to support such doctrinal concepts as Operational Maneuver From the Sea (OMFTS). One solution is to develop a Littoral Region Area Network (LRAN). The primary goal of this thesis is to underscore the littoral operating environment and bandwidth requirements. It also investigates reliable seaborne network communication systems complementary to satellite and wireless networks, and proposes an open, standards-based modular architecture, utilizing a network centric design model as the basis for LRAN. It employs modeling and simulation techniques to demonstrate coupling of the system integration processes with the doctrinal concepts of OMFTS.

DoD KEY TECHNOLOGY AREAS: Command, Control, and Communications, Other (Information Technology)

KEYWORDS: Networks, Aerostats, Littorals, Operational Maneuver from the Sea (OMFTS), Communications, Modeling and Simulation, IEEE 802.11, ADNS, Marine Corps Tactical Data Network

RE-ENGINEERING THE UNITED STATES MARINE CORPS' RECRUIT DISTRIBUTION MODEL (RDM)

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The United States Marine Corps accomplishes its mission "to put the right Marine in the right place at the right time with the right skills and quality of life" in a variety of ways. One of the information systems assisting the Marine Enlisted Assignments branch is the Recruit Distribution Model (RDM). This thesis proposes changes to the RDM user interface, data management, assignment model, and analysis capability. With the use of business process re-engineering, process modeling, mathematical modeling, and database design a fully functional prototype has been developed to address each identified change proposal. This re-engineered system includes numerous innovations such as an intuitive navigational scheme using switchboards, and the elimination of manual data entry for data already available in the system. It also provides a number of significant contributions beneficial to the USMC. For instance, the re-engineered system allows the user to objectively analyze different results by comparing four different objective measures, and its mathematical model uses commercial-off-the-shelf products eliminating a proprietary solver. All these changes will empower managers to effectively and efficiently manage the assignment of recruits in order to meet the challenges of the 21st century.

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DoD KEY TECHNOLOGY AREAS: Manpower, Personnel, and Training, Modeling and Simulation, Other (Database Management Systems)

KEYWORDS: USMC, Databases, Manpower Assignment, Models, Decision Support Systems, Graphical User Interface

THE LOGISTICS MANAGEMENT DECISION SUPPORT SYSTEM (LMDSS): AN EFFECTIVE TOOL TO REDUCE LIFE CYCLE SUPPORT COSTS OF AVIATION SYSTEMS?

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This thesis assesses the capability of the Logistics Management Decision Support System (LMDSS) to meet the information needs of Naval Air Systems Command (NAVAIR) logistics managers based on surveys of logistics managers and interviews with LMDSS program representatives.

The LMDSS is being introduced as a tool to facilitate action by NAVAIR logistics managers to reduce the life cycle support costs of aviation systems while protecting readiness. We conclude the LMDSS does not meet the definition of a Decision Support System due to the lack of modeling capabilities. The LMDSS architecture and capabilities meet the information needs of surveyed logistics managers and support Affordable Readiness initiatives which are the means by which NAVAIR intends to reduce life cycle costs while sustaining aviation system readiness levels. Lack of modeling, graphics, and sensitivity analysis capabilities limits identification, analysis, and comparison of Affordable Readiness initiatives.

We recommend modeling tools and graphics capabilities be incorporated as part of the LMDSS application. We further recommend that initiatives to improve data validity be expedited and that Maintenance Level 3 detail cost data be provided. Recommendations are made for further research.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Decision Support Systems, Logistics, Life Cycle Costs

MIGRATING FROM WIN NT 4.0 TO WIN NT 5.0 IN THE MARINE CORPS ENTERPRISE NETWORK (MCEN)

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The purpose of this study is to provide the United States Marine Corps (USMC) with an analysis of Windows NT 5.0 Network Operating System (NOS). This analysis will assist the Network Operations

Center (NOC) in preparation for the eventual migration of Windows NT 5.0 into the Marine Corps Enterprise Network (MCEN).

NT 5.0 offers some significant enhancements over earlier versions. Active Directory provides a unified platform to manage NOS resources by storing user information, network shares and policies. NT File System (NTFS) version 5 permits dynamic allocation of primary storage space to each user. NT 5.0 also improves network security by incorporating use of the Kerberos Version 5 protocol, providing integrated security for authentication and file encryption.

A top-down migration strategy should be incorporated by the NOC. Particularly important is how the NOC builds the Domain Naming Service (DNS) conventions for the MCEN. This will require every subordinate unit to adhere to the naming convention of its chain of command.

Migrating from Banyan Vines to Windows NT presents a significant change to the organization. An effective Change Management strategy can assist members of the organization in understanding the sense of loss and uncertainty that occur in times of transition, and to deal with these changes effectively.

DoD KEY TECHNOLOGY AREAS: Command, Control, and Communications, Computing and Software, Manpower, Personnel, and Training

KEYWORDS: USMC, Marine Corps Enterprise Network, MCEN, Network Operations Center, NOC, Network Operating System, NOS, WIN NT 5.0, NT, Change Management

TECHNOLOGY ASSESSMENT OF THE INSPECTION READINESS PLAN IN CHEMICAL WEAPONS CONVENTION CHALLENGE INSPECTIONS

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This thesis identifies current Information Technology initiatives to help improve the Navy's Inspection Plan for Chemical Weapons Convention (CWC) Challenge Inspections. The CWC is an intrusive inspection. The Challenge Inspection allows for a team of international inspectors to inspect on very short notice a naval facility suspected of violating the CWC.

This thesis begins with a review of the CWC Challenge Inspection timeline. It then describes the Navy's Inspection Readiness Plan for CWC Challenge Inspections as well as the Navy Tiger Team that is sent to naval facilities to assist the Commanding Officer and base personnel during inspections. One of the initiatives evaluated by this analysis is the use of current information technology. To ascertain the feasibility of using current information technology in the CWC Challenge Inspection process, this thesis reviews Tiger Team inspection equipment, conducts interviews with Tiger Team personnel, and assesses the latest commercial information technology. This thesis concludes with recommendations of commercial information technology products for inclusion into the CWC Challenge Inspection process.

DoD TECHNOLOGY AREA: Computing and Software

KEYWORDS: CWC Challenge Inspection, Chemical Weapons Convention, Information Technology